

AiM Infotech

Marelli SRA

Release 1.04

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ECU



# 1

## Software setting

This tutorial explains how to connect Marelli SRA ECU to AiM devices.

Marelli SRA ECU needs a software setting to correctly communicate with AiM devices. To perform it use Marelli "Vision" software. The operations to perform are:

- selecting the configuration to be used
- set "Data acquisition CAN line"
- set "Frequencies repartition table"
- Set "Data Elements Table"

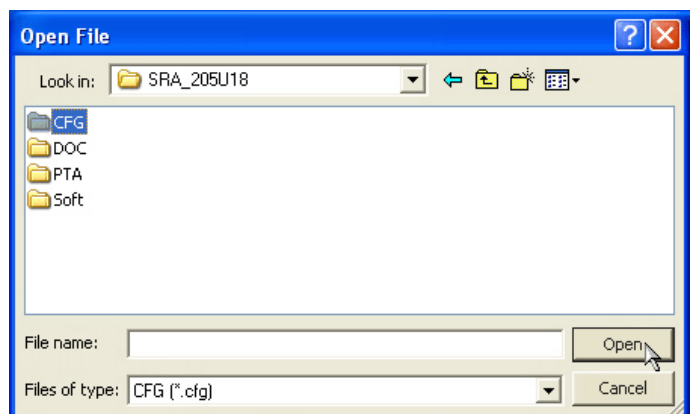
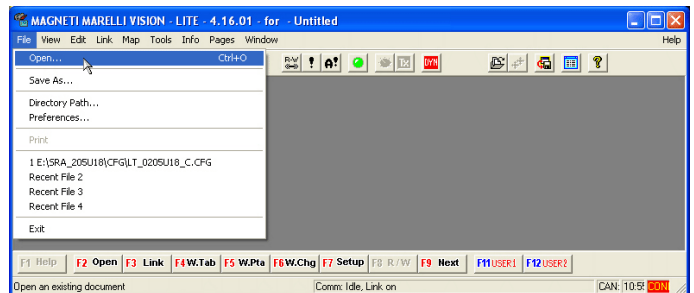
## 1.1

### Selecting the configuration to be used

Install and run it and follow the following instructions.

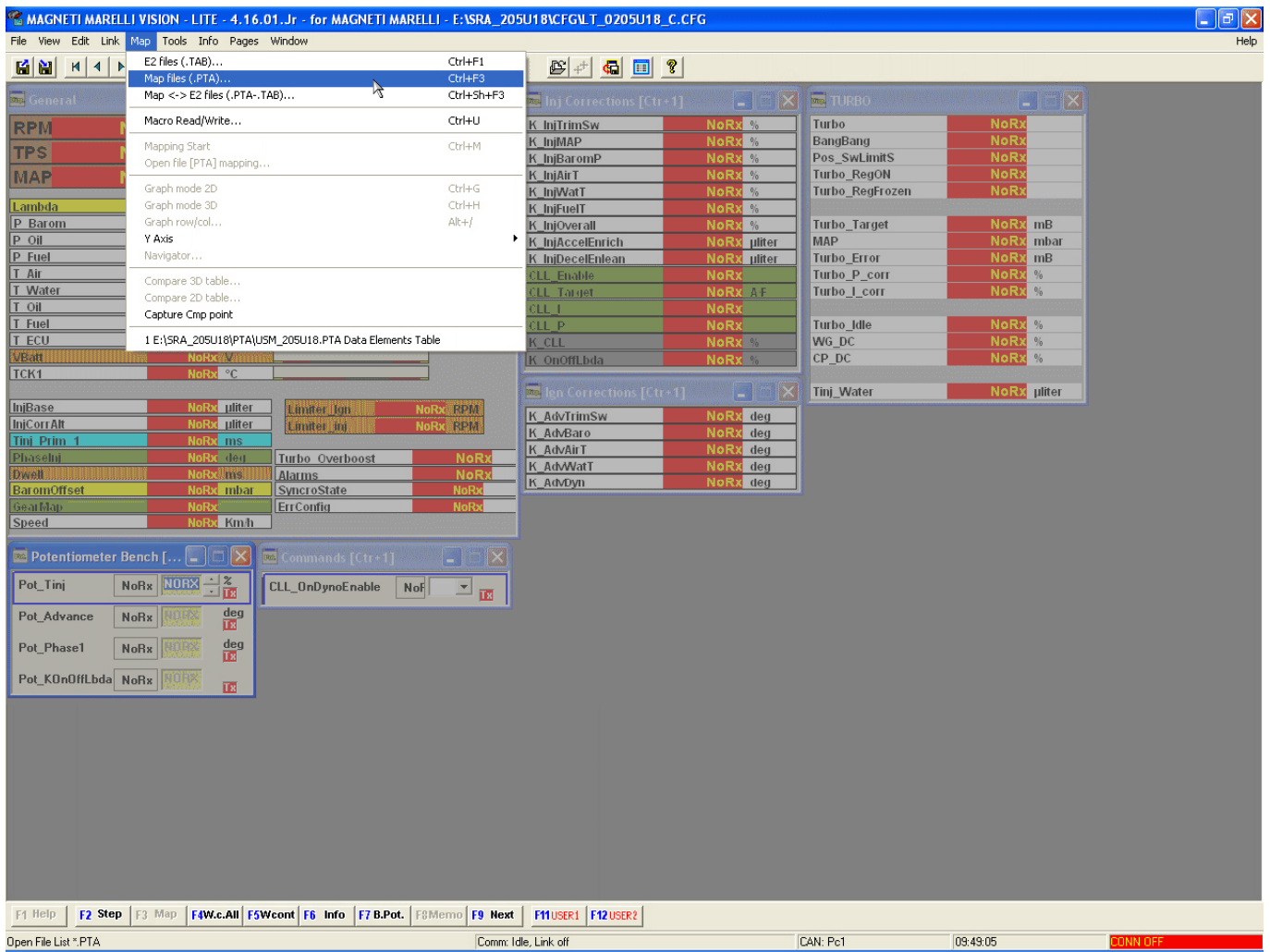
Follow this path:

- File -> Open
- Select "SRA\_XXXXXX" folder
- Select "CFG" sub folder
- Click "Open"

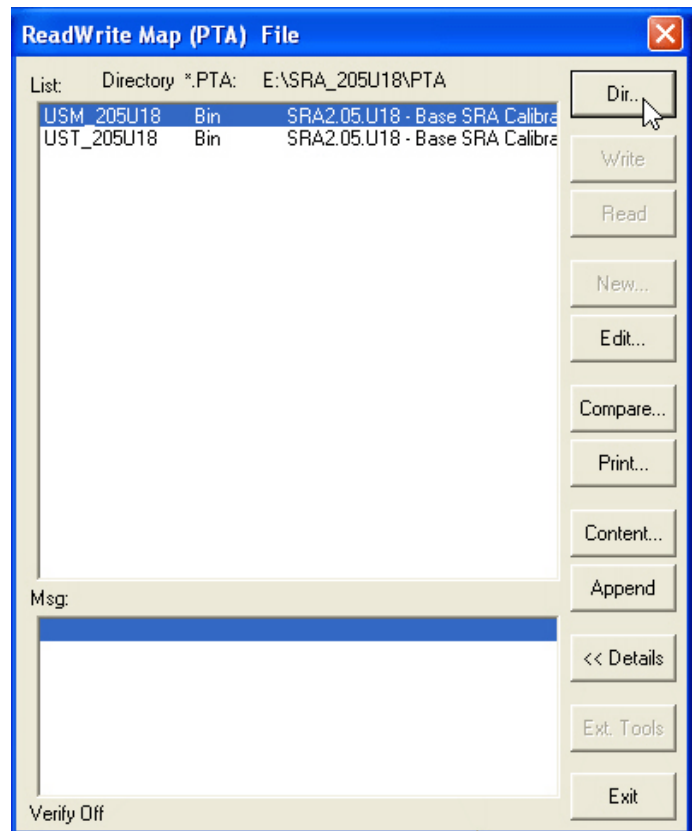




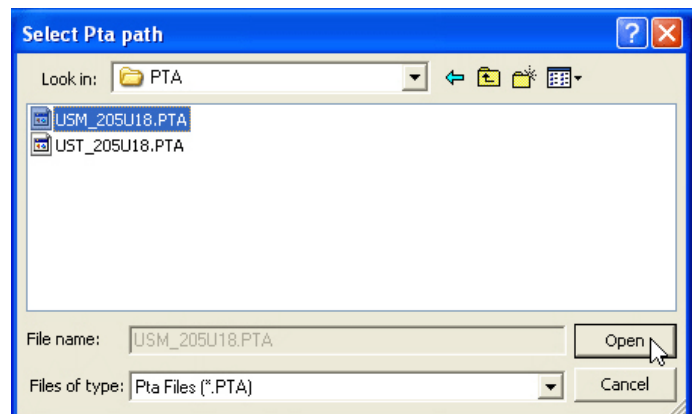
- Select the configuration to open and click "Open"
- "Vision" software main window shows up
- follow this path: "Map -> Map files (PTA)..."



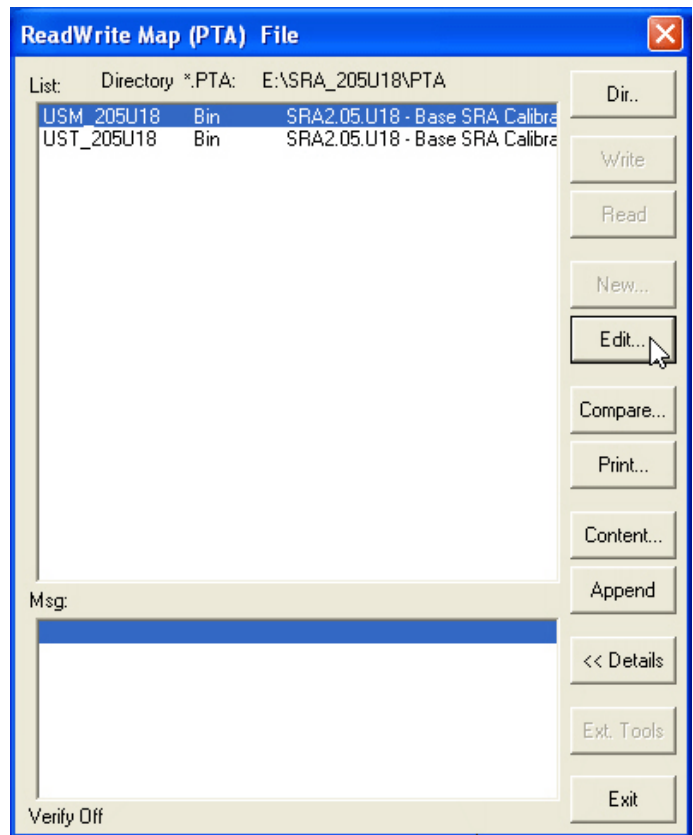
- Click "Dir.."



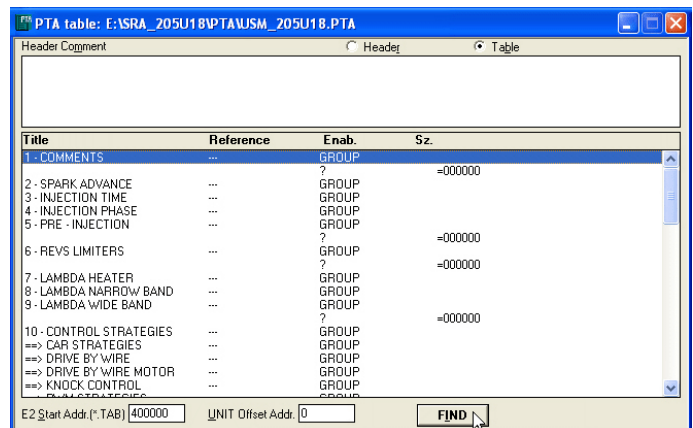
- Select the file to open
- Click "Open"



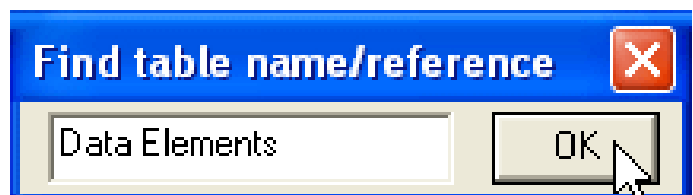
- Click "Edit..."



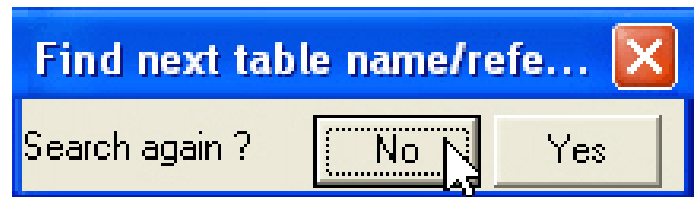
- Click "Find"



- Fill in "Data Elements"
- click "OK"



- If "Find table/name reference" window appears click "No"



## 1.2 Setting "Data acquisition CAN line"

Once selected the configuration there are three steps to follow. First one is selecting the Data Acquisition CAN line. Marelli SRA ECU features in fact two CAN lines: CAN0 and CAN1. The CAN line you are selecting here should be the same you will use when connecting AiM device (see chapter 3).

- Double click on "Data acquisition CAN line"

PTA table: ...sion\_EVO4\MARELLI\MARELLI\_SOFTWARE\vision\Mappa\_Base\_SRA-E.PTA

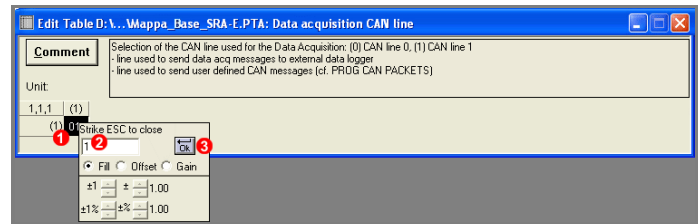
Header Comment  
 CAN telemetry element : Address, Type, Gain, Offset.  
 TYPE : Describe source data type and destination type.  
 TYPE: Byte=0x01,Word=0x02,DWord=04,Float3=0x0E -> SByte,SWord,SDWord = 0x8X.  
 TYPE: LSB -> source , 3 bytes MSB destination. EXAMPLE: Pdl value : Conversion Float -> sword : TYPE =0x0000820E

Title	Reference	Enab.	Sz
<b>==&gt; CAN LINK</b>			
--- DATA ACQUISITION ---		?	=00
Data acquisition CAN line	EE.CanU.Acquisi	X	=01
Frequencies Repartition Table	EE.SizeFreqTele	X	1x8x1
Data Elements Table	EE.TelemTable	X	4X32X1
		?	=UU
--- EXPANSION MODULES ---		?	=00
Selection module present on CAN	EE.CanExpMod.	X	1x15x1
Expansion modules CAN line	EE.CanU.Expans	X	=00
		?	=00
--- PROG. CAN PACKETS ---		?	=00
CAN IDs	EE.CanU.IdUser	X	3x1x1
CAN packets definition	EE.CanU.tbl_US	X	4x3x1

E2 Start Addr.(\*.TAB)     UNIT Offset Addr.     **FIND**

To change the table values:

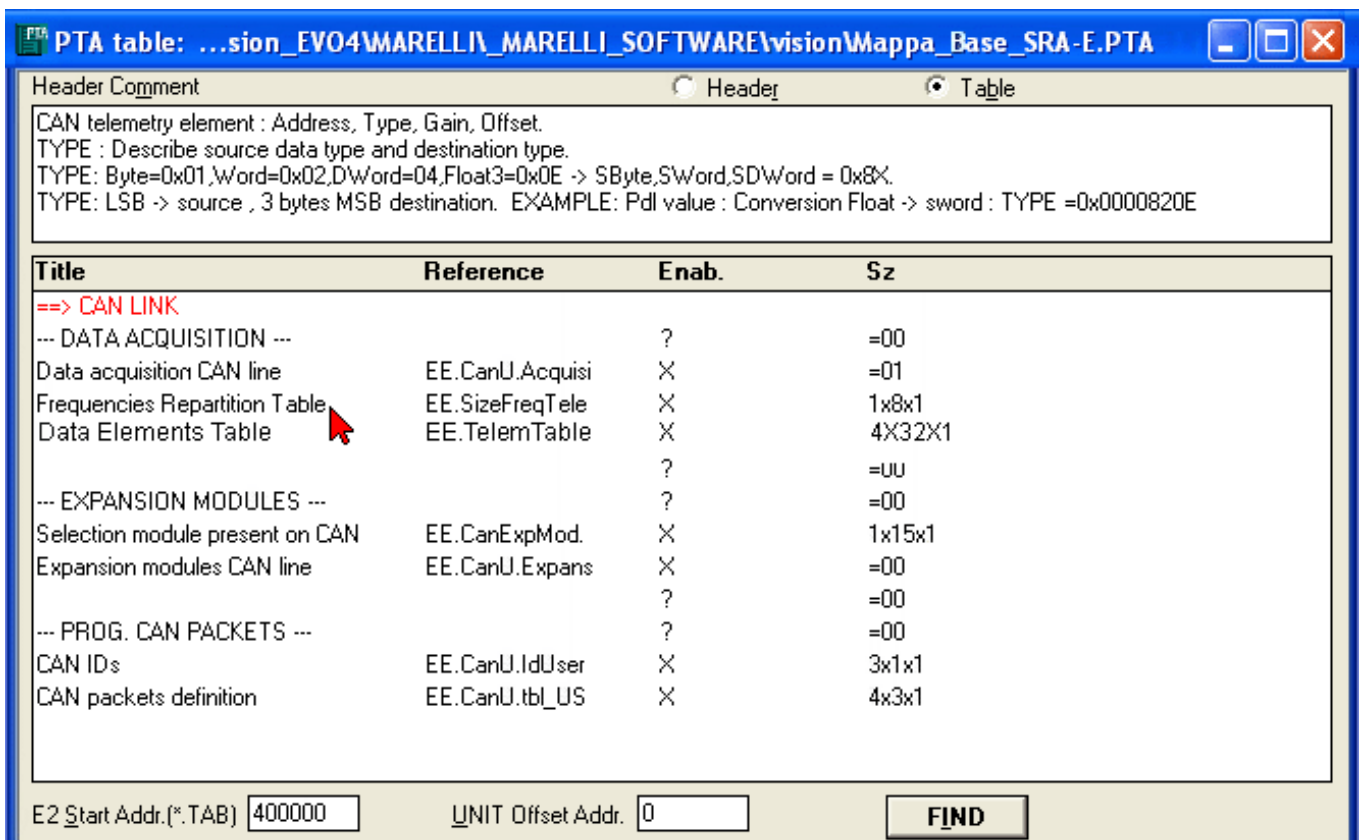
- double click on the highlighted cell (1)
- select fill
- fill in the desired value – 0 or 1 according to the CAN line you are going to use: AiM suggests to use CAN1 – (2)
- click "OK" (3)
- click "Esc" to come back to starting point



## 1.3 Setting "Frequencies Repartition Table"

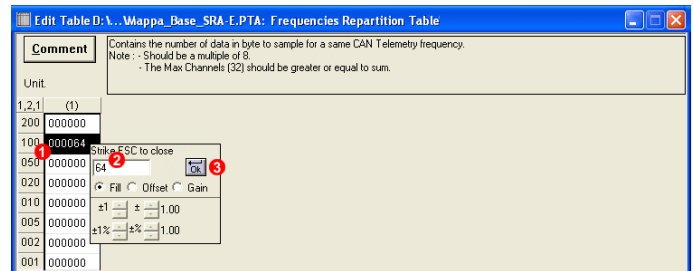
Second step is setting frequencies repartition.

- Double click on "Frequencies Repartition table"



To change the table values:

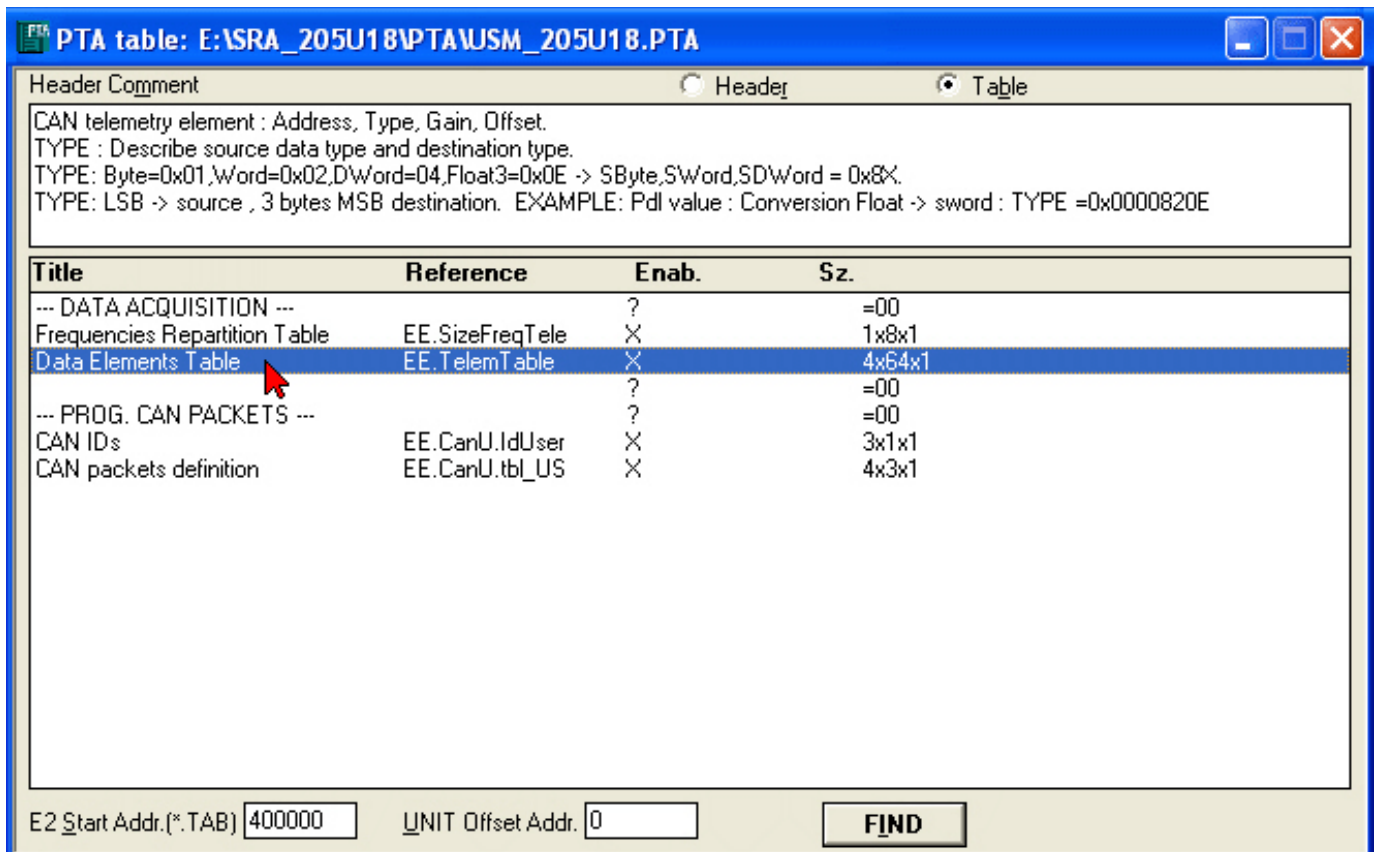
- double click on the black cell (1)
- select fill
- fill in the desired value – in this case 64 – (2)
- click "OK" (3)
- click "Esc" to come back to the p



## 1.4 Setting "Data Elements Table"

Third and last step is setting "Data elements Table".

- Double click on "Data Elements Table"





Data Elements Table is made up of four columns:

- Address (1)
- Type (2)
- Gain (3)
- Offset (4)

Each row of the table corresponds to an ECU channel. To set it you need to fill in each cell the digits shown in the **table of paragraph 1.5** and then close the window.

**Edit Table E:\...WSM\_205U18.PTA: Data Elements Table**

**Comment** CAN telemetry element : Address, Type, Gain, Offset.  
 TYPE : Describe source data type and destination type.  
 TYPE: Byte=0x01,Word=0x02,D\Word=04,Float3=0x0E -> SByte,S\Word,SD\Word = 0x8X.  
 TYPE: LSB -> source , 3 bytes MSB destination. EXAMPLE: Pdl value : Conversion Float -> sword : TYPE =0x0000820E

Unit:

1,1,1	(1)	(2)	(3)	(4)
(1)	00208270	00000002	3F800000	00000000
(2)	00000000	00000001	3F800000	00000000
(3)	002080AA	00000082	3F800000	00000000
(4)	00000000	00000001	3F800000	00000000
(5)	00208084	00000082	3F800000	00000000
(6)	00000000	00000001	3F800000	00000000
(7)	0020808A	00000082	3F800000	00000000
(8)	00000000	00000001	3F800000	00000000
(9)	00208088	00000082	3F800000	00000000
(10)	00000000	00000001	3F800000	00000000
(11)	002080BC	00000002	3F800000	00000000
(12)	00000000	00000001	3F800000	00000000
(13)	00208086	00000002	3F800000	00000000
(14)	00000000	00000001	3F800000	00000000
(15)	00208386	00000001	3F800000	00000000
(16)	002085C4	00000001	3F800000	00000000
(17)	00208398	00000002	3F800000	00000000
(18)	00000000	00000001	3F800000	00000000
(19)	00208094	00000082	3F800000	00000000
(20)	00000000	00000001	3F800000	00000000
(21)	00208129	00000001	3F800000	00000000
(22)	00208382	00000081	3F800000	00000000
(23)	002080B6	00000002	3F800000	00000000
(24)	00000000	00000001	3F800000	00000000
(25)	00208E04	00000002	3F800000	00000000
(26)	00000000	00000001	3F800000	00000000
(27)	00208550	00000204	3F800000	00000000

The software comes back to the previous window:

- quit clicking on the top right red cross

Header Comment

CAN telemetry element : Address, Type, Gain, Offset.  
TYPE : Describe source data type and destination type.  
TYPE: Byte=0x01,Word=0x02,DWord=04,Float3=0x0E -> SByte,SWord,SDWord = 0x8X.  
TYPE: LSB -> source , 3 bytes MSB destination. EXAMPLE: Pdl value : Conversion Float -> sword : TYPE =0x0000820E

Title	Reference	Enab.	Sz.
--- DATA ACQUISITION ---		?	=00
Frequencies Repartition Table	EE.SizeFreqTele	X	1x8x1
Data Elements Table	EE.TelemTable	X	4x64x1
--- PROG. CAN PACKETS ---		?	=00
CAN IDs	EE.CanU.IdUser	X	3x1x1
CAN packets definition	EE.CanU.tbl_US	X	4x3x1

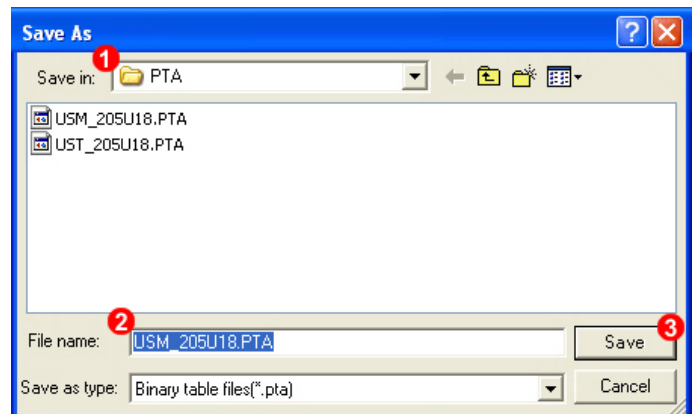
E2 Start Addr. (\*.TAB)  UNIT Offset Addr.

- click "Yes" to save changes

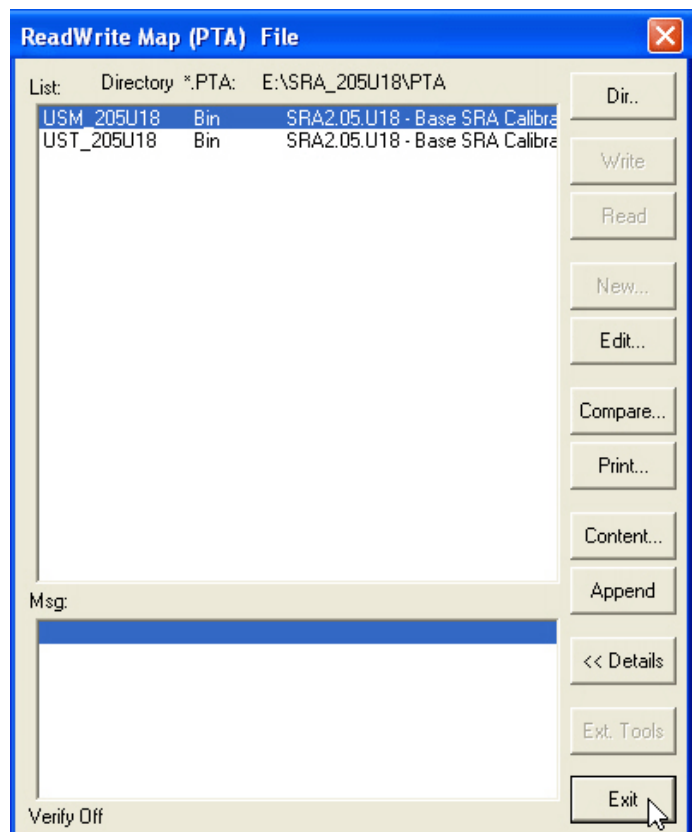
Vision Windows Application

Save changes to E:\SRA\_205U18\PTA\USM\_205U18.PTA

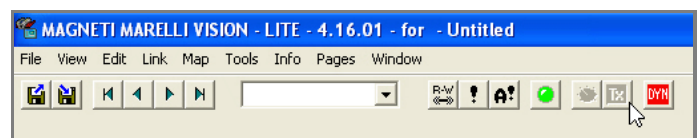
- select file destination folder (1)
- fill in file name (2)
- click "Save" (3)



- Click "Exit"



- Click "Tx" on the software icon toolbar



## 1.5

### Data elements table for Marelli SRA ECU

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Here follows the digits to fill in "Data elements table" as said in **paragraph 1.4**.

COUNTER	ADDRESS	TYPE	GAIN	OFFSET
1	00208270	00000002	3F800000	00000000
2	00000000	00000001	3F800000	00000000
3	00208080	00000082	3F800000	00000000
4	00000000	00000001	3F800000	00000000
5	0020808C	00000082	3F800000	00000000
6	00000000	00000001	3F800000	00000000
7	002080A0	00000082	3F800000	00000000
8	00000000	00000001	3F800000	00000000
9	0020808A	00000082	3F800000	00000000
10	00000000	00000001	3F800000	00000000
11	002080A8	00000082	3F800000	00000000
12	00000000	00000001	3F800000	00000000
13	00208088	00000082	3F800000	00000000
14	00000000	00000001	3F800000	00000000
15	00208086	00000082	3F800000	00000000
16	00000000	00000001	3F800000	00000000
17	00208084	00000082	3F800000	00000000
18	00000000	00000001	3F800000	00000000
19	002080A4	00000082	3F800000	00000000
20	00000000	00000001	3F800000	00000000
21	002080BC	00000002	3F800000	00000000
22	00000000	00000001	3F800000	00000000
23	00208392	00000082	3F800000	00000000
24	00000000	00000001	3F800000	00000000



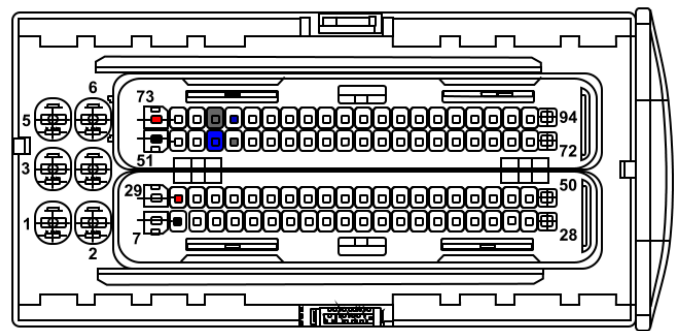
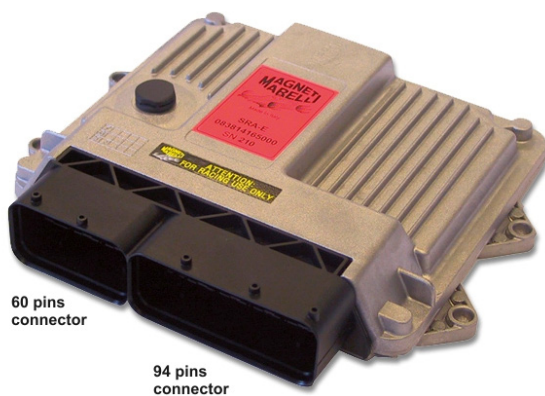
25	00208082	00000082	3F800000	00000000
26	00000000	00000001	3F800000	00000000
27	0020808E	00000082	3F800000	00000000
28	00000000	00000001	3F800000	00000000
29	002080AA	00000002	3F800000	00000000
30	00000000	00000001	3F800000	00000000
31	00208094	00000082	3F800000	00000000
32	00000000	00000001	3F800000	00000000
33	002080B4	00000002	3F800000	00000000
34	00000000	00000001	3F800000	00000000
35	002080BA	00000002	3F800000	00000000
36	00000000	00000001	3F800000	00000000
37	00208E04	00000002	3F800000	00000000
38	00000000	00000001	3F800000	00000000
39	002080A6	00000082	3F800000	00000000
40	00000000	00000001	3F800000	00000000
41	00208D25	00000001	3F800000	00000000
42	00208D26	00000001	3F800000	00000000
43	00208D17	00000001	3F800000	00000000
44	00208D18	00000001	3F800000	00000000
45	00208846	00000001	3F800000	00000000
46	00208845	00000001	3F800000	00000000
47	0020883D	00000001	3F800000	00000000
48	00208130	00000001	3F800000	00000000
49	00208385	00000001	3F800000	00000000
50	00208383	00000001	3F800000	00000000
51	00208381	00000001	3F800000	00000000
52	002085B7	00000001	3F800000	00000000
53	002085B8	00000001	3F800000	00000000
54	002085B6	00000001	3F800000	00000000
55	002055B5	00000001	3F800000	00000000



56	00208386	00000001	3F800000	00000000
57	002080B0	0000820E	3F800000	00000000
58	00000000	00000001	3F800000	00000000
59	00208A18	0000820E	3F800000	00000000
60	00000000	00000001	3F800000	00000000
61	00000000	00000001	3F800000	00000000
62	00000000	00000001	3F800000	00000000
63	00000000	00000001	3F800000	00000000
64	00000000	00000001	3F800000	00000000

## 2 Connection to AiM devices

Magneti Marelli SRA ECU features a bus communication protocol based on CAN on the 94 pins front right connector. Here below it is indicated on the left; on the right is connector pinout in detail.



Here below is connection table. As said before the ECU has two CAN lines: CAN0 and CAN1; AiM suggests to use CAN1.

**Please note:** be sure to always use the CAN line you selected in the software configuration (see paragraph 1.2) **and never** cross CAN High and CAN low of different CAN lines.

94 Pins connector pin	Pin function	AiM cable
76	CAN0 High	CAN+
54	CAN0 Low	CAN-
<b>55</b>	<b>CAN1 High</b>	<b>CAN+</b>
<b>77</b>	<b>CAN2 Low</b>	<b>CAN-</b>
8 or 51	Ground	GND
73 or 30	Battery Positive Pole	9-15 VDC

### 3

## AiM device configuration

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Before connecting the ECU to AiM device set this up using AiM Race Studio software. The parameters to select in the device configuration are:

- ECU manufacturer "MARELLI"
- ECU Model "SRA\_SRAE\_SRT"

### 4

## Available channels

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Channels received by AiM devices connected to "MARELLI" "SRA\_SRAE\_SRT" protocol are:

<b>ID</b>	<b>CHANNEL NAME</b>	<b>FUNCTION</b>
ECU_1	SRA_RPM	RPM
ECU_2	SRA_TPS1	Throttle position sensor bank 1
ECU_3	SRA_PDL1	Active throttle position bank 1
ECU_4	SRA_WTEMP	Engine coolant temperature
ECU_5	SRA_OILP	Oil pressure
ECU_6	SRA_OILT	Oil temperature
ECU_7	SRA_FUELP	Fuel pressure
ECU_8	SRA_ATMP	Atmospheric pressure
ECU_9	SRA_MAP	Manifold air pressure
ECU_10	SRA_AIRT	Intake air temperature
ECU_11	SRA_AFR	Air fuel ratio
ECU_12	SRA_ADV	Ignition advance
ECU_13	SRA_TPS2	Throttle position sensor bank 2
ECU_14	SRA_PDL2	Active throttle position bank 2
ECU_15	SRA_TPS	Throttle position sensor
ECU_16	SRA_TCK1	Thermocouple 1





ECU_17	SRA_GEAR	Engaged gear
ECU_18	SRA_LAMBDAmV	Lambda value in mV
ECU_19	SRA_SPEED	Speed
ECU_20	SRA_TFUEL	Fuel temperature
ECU_21	SRA_KINGFIL	Injection Correction During Upshift
ECU_22	SRA_KTEATFIL	Advance Correction F (Upshift)
ECU_23	SRA_PWM1	Duty cycle of Pwm1
ECU_24	SRA_PWM2	Duty cycle of Pwm2
ECU_25	SRA_DPV	Derivative pressure
ECU_26	SRA_DWG	Duty cycle waste gate
ECU_27	SRA_PRLD	Rotary switch position for bang bang start limiter
ECU_28	SRA_ITSP	Injection trim switch position
ECU_29	SRA_ASTP	Absolute throttle position (default 90%)
ECU_30	SRA_KAWT	Coefficient engine coolant temperature multiplier
ECU_31	SRA_KABARO	Ign coefficient barometric pressure multiplier (Cranking)
ECU_32	SRA_IKTA	Coefficient intake air temperature multiplier (Cranking)
ECU_33	SRA_IKTF	Coefficient Fuel temperature multiplier (Cranking)
ECU_34	SRA_IKBARO	Inj. coefficient barometric pressure multiplier (Cranking)
ECU_35	SRA_IKADM	Injection correction F (Padmission)
ECU_36	SRA_CLAV	Advance Correction F (Trimmer Position)
ECU_37	SRA_PDL	Active throttle position
ECU_38	SRA_TPSE	Throttle position sensor (Encoder)